

Chapter 8

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I. INTRODUCTION

The purpose of the Safety Element is to reduce the potential risk of death, injuries, and economic damage resulting from natural and man-made hazards. The Los Angeles County Safety Element addresses the following issues:

- **Natural hazards**, including seismic hazards, geologic hazards, flood and inundation hazards, and wildland and urban fire hazards.
- **Man-made hazards**, such as terrorism; bio-terrorism, and hazardous materials management.
- **County emergency and safety response services.**

II. BACKGROUND

The Safety Element assesses public health and safety threats from a variety of hazards, and it recommends strategies to reduce those threats. Local jurisdictions have a degree of discretion in tailoring the Safety Element to their particular concerns. As such, the serious threat of earthquakes to Los Angeles County has influenced the emphasis on earthquake-induced hazards in the General Plan. Fortunately, many actions that reduce the risk from earthquakes also contribute to the reduction of risks from fire, flood, and other geologic hazards.

Included in this Safety Element are a discussion of local conditions and the incorporation of seismic hazard zone maps published by the California Department of Conservation, California Geological Survey, as required by the Seismic Hazards Mapping Act of 1990. These maps provide local government with an additional tool for identifying potential locations where the risks of damage to structures as a result of seismic events may be significant and life threatening. In

addition to detailing provisions related to natural hazard issues, the matter of emergency preparedness in the face of disasters and the potential for subsequent man-made hazards is addressed in this element of the General Plan.

The Safety Element provides guidance through policies and actions that can produce a safer environment. It is specifically designed to present public officials with suitable policies for decisions regarding regulations, programs, and projects that further public safety and assist County agencies in meeting their public safety responsibilities. The threat of natural and man-made hazards to the County can never be totally eliminated. The implementation of the Safety Element, however, can significantly reduce the magnitude of impacts from a variety of future disaster events.

Existing Setting

Los Angeles County is the center of the largest population concentration on the Pacific Coast, and is a key industrial, commercial, economic, and cultural center served by an extensive transportation, housing, and industrial infrastructure network.

Growth patterns in the County have seen the intensification of land uses throughout urban areas, and the extension of development into areas with environmental hazards, such as fragile hillsides, floodplains, and forests. This continued pattern of growth will further increase the vulnerability of the County to seismic, geologic, flood, and fire hazards. The County recognizes the need to maintain prudent land use, hazard abatement, and risk management programs.

It is the County's responsibility to identify hazardous conditions that expose the public to unacceptable levels of risk, and to cooperate with government agencies and the public-at-large to reduce risks to tolerable levels. Tolerable

Development Guidelines for projects in Seismic Hazard Areas

In addition to all of the requirements outlined in the Los Angeles County Building Code, the following guidelines apply to projects that are located within a Seismic Hazard Area as indicated on the Seismic Hazards Map (Figure 8.1):

1. A geology report, prepared by a registered geologist, shall be submitted to the appropriate local agency for review prior to approval of a proposed development within a Seismic Hazard Area.
2. No structure for human occupancy shall be constructed within 50 feet of an active fault trace (specific exceptions include individually constructed, wood frame, single family residences and mobile homes).
3. Applications for zoning or tentative subdivision approval or renewal shall be submitted to the County Engineer for review. On the basis of this review, the County Engineer shall determine the necessity for additional geologic data, and establish such conditions for development as may be appropriate.
4. The following uses shall be prohibited in Seismic Zones: emergency response facilities including sheriff and fire stations; vital facilities including hospitals and major utility and communications installations; and facilities for dependent populations, including but not limited to, schools, day care centers, convalescent homes, institutions for the physically and mentally handicapped, and high security correctional institutions.

levels of risk are achieved through compliance with county, state, and federal safety standards and policies. The County's Office of Emergency Management (OEM) provides leadership and inter-departmental emergency coordination, and it is the County's liaison to state and federal safety agencies. The County's Emergency Operations Center (EOC) responds to both natural disasters and those related to terrorism.

III. NATURAL HAZARDS

The following sections discuss the identified natural hazards and risks to the unincorporated areas of the County.

Seismic Hazards

Since 1800, over 90 significant earthquakes have jolted the Los Angeles region. Within the County itself, there are over 50 active and potentially active fault segments, an undetermined number of buried faults, and at least four (4) blind-thrust faults capable of producing damaging earthquakes. Figure 8.1, the Los Angeles County Seismic Hazards Map, shows the fault lines that run through the County, and details seismic, liquefaction, and landslide zones.

Earthquakes present a multitude of potentially dangerous consequences that can include ground rupture, ground failure, and landslides. In addition, flooding of low-lying coastal areas could result from a tsunami generated by a large offshore earthquake or submarine slide. Widespread and localized earthquake-induced effects place structures or utility corridors at risk that, if damaged, could result in fires, failure of large dams, or the release of toxic, flammable, or explosive materials.

A catastrophic earthquake would severely strain the emergency response and recovery capabilities of federal, state, and local governments, and profoundly impact the regional and state economy. Several policies address safety measures to reduce the risks from a potential earthquake in the County.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 was created to prohibit the location of most structures for human occupancy across the traces of active faults, thus lessening the hazard of fault rupture. Los Angeles County development complies with all aspects of the Alquist-Priolo Act. The three main provisions are to:

- Require the California Geological Survey to implement maps of the surface traces of known active faults, including both the best known location where faults cut the surface and a buffer zone around the known trace(s);

- Require property owners (or their real estate agents) to disclose that their property lies within identified hazard zones; and,
- Prohibit new construction of projects as defined by the Alquist-Priolo Act within these identified hazard zones until a comprehensive geological study has been completed.

The following general standards and conditions for development in seismic zones will apply in all unincorporated areas, and may be expanded and elaborated upon by local-level plans.

Liquefaction and Landslides

In 1990, the California State Legislature passed the Seismic Hazards Mapping Act requiring the California Geological Survey to prepare new Seismic Hazard Zone Maps showing areas where earthquake-induced liquefaction or landslides have historically occurred, or where there is a high potential for such occurrences. The purpose of the Seismic Hazards Mapping Act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, and other ground failure, as well as other hazards caused by earthquakes. **Figure 8.1**, the Los Angeles County Seismic Hazards Map, shows the liquefaction and landslide risks for the County.

In addition to fault traces and seismic zones, the two (2) additional categories on the Seismic Hazards Map are liquefaction and landslide zones:

- **Liquefaction:** Liquefaction is a process by which water-saturated granular soils transform from a solid to a liquid state during strong ground shaking; and,
- **Earthquake-Induced Landslides:** A landslide is a general term for a falling, sliding, or flowing mass of soil, rocks, water, and debris.

Geologic Hazards

More than 50 percent of unincorporated Los Angeles County is comprised of hilly or mountainous terrain, and development pressure is projected to continue in these geologically sensitive areas. Hillside hazards are identified as a major problem throughout the County. Mud and debris

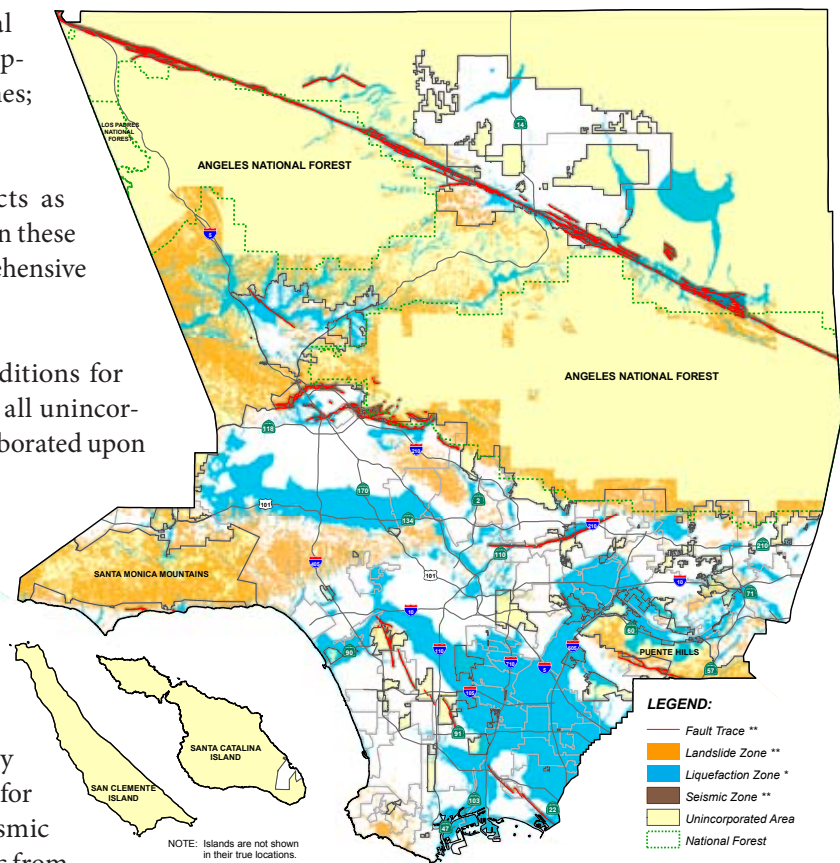


Figure 8.1: L.A. County Seismic Hazards Map

flows, active deep-seated landslides, hillside erosion, and man-induced slope instability comprise the vast majority of hillside hazards and create both pre-development and post-development problems. These geologic hazards include artificially saturated or rainfall-saturated slopes, the erosion and undercutting of slopes, earthquake-induced rock falls and shallow failures, and natural or artificial compaction of unstable ground. While the elimination of all losses from geologic hazards is unrealistic, the County actively works to limit the occurrence of large-scale losses through regulation and development standards.

Flood and Inundation Hazards

Flooding in the County can be earthquake-induced or can result from intense rainfall. Although the likelihood for the catastrophic inundation of low-lying coastal areas of the County by tsunamis is considered relatively low, the risk of losing the vital commerce associated with the Los Angeles/Long Beach Harbor warrants adequate risk reduction measures. As such, the Ports of Long Beach and Los Angeles



Big Tujunga Dam

have completed a *Tsunami Hazard Assessment* to guide disaster planning and mitigate damage from a potential tsunami at their facilities.

The significant commercial, residential, and public investment in unincorporated Marina del Rey is also at risk. Inundation caused by a catastrophic dam or aqueduct failure could devastate large areas of the County and threaten many residences and businesses. Two (2) dam failures and one (1) near failure have occurred in the County since 1928. Frequently occurring, intense storm events have also caused mudflow and flood hazards involving the destruction of property, injuries, and deaths. **Figure 8.2** shows the County's flood zone areas. Detailed descriptions of the County's development standards in flood zone areas are contained in the Safety Element in the *Technical Appendix* to the General Plan.

The following general standards and conditions for development in flood zones will apply in all unincorporated areas, and may be expanded and elaborated upon by local-level plans.

Floodplain Management

Since October 1990, the County has been a voluntary participant in the National Flood Insurance Program (NFIP) of the Federal

Emergency Management Agency (FEMA). As a participant, the County is responsible for the regulation of development in special flood hazard areas of the County and the planning for other floodplain management activities that will promote and encourage programs for the preservation and restoration of the natural state of the floodplain. As a compliance requirement of the National Flood Insurance Program, the County enforces regulations of these developments to ensure that buildings are erected at a safe elevation to prevent potential damages to properties.

The County provides information regarding flood zone designations from FEMA's Flood Insurance Rate Maps to property owners for use in resolving flood insurance issues with their respective insurance companies and lending institutions. The County has developed a flood zone website for use by the general public to access this information at www.dpw.lacounty.gov/apps/wmd/floodzone.

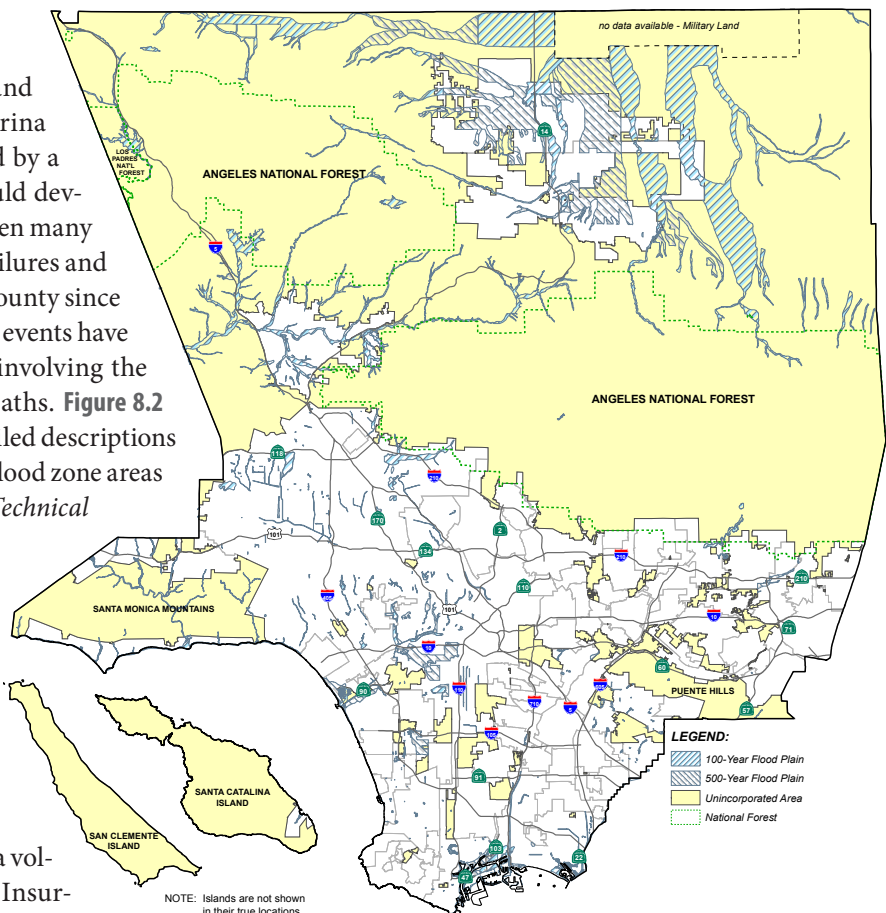


Figure 8.2: L.A. County Flood Zone Map

Development Guidelines for projects in Flood Zones

The following guidelines apply to projects that are located within a Flood Zone as indicated on the Flood Zone map (Figure 8.2):

1. No permanent structures shall be constructed, altered, modified or enlarged within the boundaries of a flood zone, except: a) those accessory structures that will not impede the flow of water, and, b) flood control structures approved by the County Flood Control District.
2. Any development proposed within a flood zone area shall be reviewed by the County Engineer or Flood Control District who will define the area within which no permanent structures or improvements shall be permitted.
3. The scale, design, and intensity of any approved project in a flood zone must minimize exposure of current and future community residents to flood related property damage and loss.
4. Any proposed project in a flood zone must be consistent with density and use standards set forth in the General Plan or applicable local-level plan, and must be compatible with the character of surrounding development.
5. Any proposed project in a flood zone must be situated and designed so as to avoid isolation from essential services and facilities in the event of flooding.
6. The costs associated with on and off-site hazard mitigation, including design, construction, and continued maintenance of necessary flood protection facilities will be assumed by the developer and/or future owners, occupants, or residents of the proposed development.

The Flood Maintenance Division of the Department of Public Works (DPW) is responsible for operating and maintaining flood control and water conservation facilities. These facilities include fifteen (15) major dams, 284 debris basins, 450 miles of storm drain channel, 2,500 miles of drains, 33 pump plants, 30 spreading grounds covering 1,989 acres, and 22 miles of barrier projects that prevent the intrusion of seawater into the fresh water supply. The Flood Maintenance Division is also responsible for implementing Best Management Practices (BMPs) to meet the permit requirements of the National Pollutant Discharge Elimination System (NPDES). These BMPs include the inspection of all storm drains for illegal connections and discharges.

The County also conducts educational outreach programs to unincorporated communities on how to mitigate flooding impacts to their properties. The County seeks to reduce the flood insurance cost for residents who are required to purchase flood insurance by taking actions which lower the community rating system number.

The County restricts development within floodplains. Any development within the floodplain cannot increase the flood hazard to adjacent properties by increasing the capital flood water surface elevation, deflecting flows, or increasing the velocity of the flow such that it causes bank erosion. Developments in the floodplain must make provisions to avoid these impacts and eliminate inundation hazards by providing adequate drainage facilities through protective



Flood Damaged Road

walls, suitable fill, raising the floor level of the building, or a combination of these methods. The County also requires compliance with FEMA regulations, including a maximum one (1) foot rise in water surface elevation of flood flows.

Fire Hazards

Los Angeles County is subject to the threat from urban fires, and especially wildland fires, due to its hilly terrain, dry weather conditions, and the nature of its plant coverage. The Forestry Division of the Fire Department has designated woodland and brush areas with high fire potential as Very High Fire Hazard Severity Zones. A variety of regulatory programs and standards are directed toward the abatement of this hazard and can be found on the Los Angeles County Fire Department's Forestry Division website at <http://fire.lacounty.gov/Forestry/Forestry.asp>. Figure 8.3 shows the areas of the County susceptible to very high fire hazards.

Due to the intensity of development, the number of the potentially affected populations, and the difficulties of containment, the County must also devote major resources to controlling potential fire hazards in its urban areas. Fire safety and suppression are especially critical in industrial areas and high-rise buildings. More information on the County's fire prevention and safety programs can be found on the Los Angeles County Fire Department's website, located at <http://fire.lacounty.gov>.

IV. HAZARDOUS MATERIALS, HAZARDOUS WASTE, AND OTHER MAN-MADE HAZARDS

Hazardous Materials and Hazardous Waste

As one of the nation's largest industrial centers, the County is vulnerable to the unauthorized releases of hazardous materials. The County is also a major producer of a wide variety of toxic, flammable, and explosive materials. An assortment of toxic materials are also stored and used in many small businesses and households throughout the County. Earthquakes, fires, and floods pose a threat to the possible release or explosion of hazardous materials.

The Safety Element addresses only limited aspects of hazardous waste and materials management, in particular, those aspects related to seismic events, fires, and floods. In general, hazardous materials management is more fully addressed in the *Los Angeles County Integrated Waste Management Plan* (California Code of Regulations (CCR) Section 18755.5), which is adopted by reference in the General Plan.

Other Man-Made Hazards

The Los Angeles region, regarded throughout the world as an economic, population, and cultural center, is a prime target for potential terrorist incidents. The County recognizes the need to address this growing safety concern throughout the County. Inter-jurisdictional cooperation is an important element in providing an effective system to provide a safe environment from man-made hazards like terrorism. The following sections discuss the services and agencies that comprise the safety systems for unincorporated areas of the County.

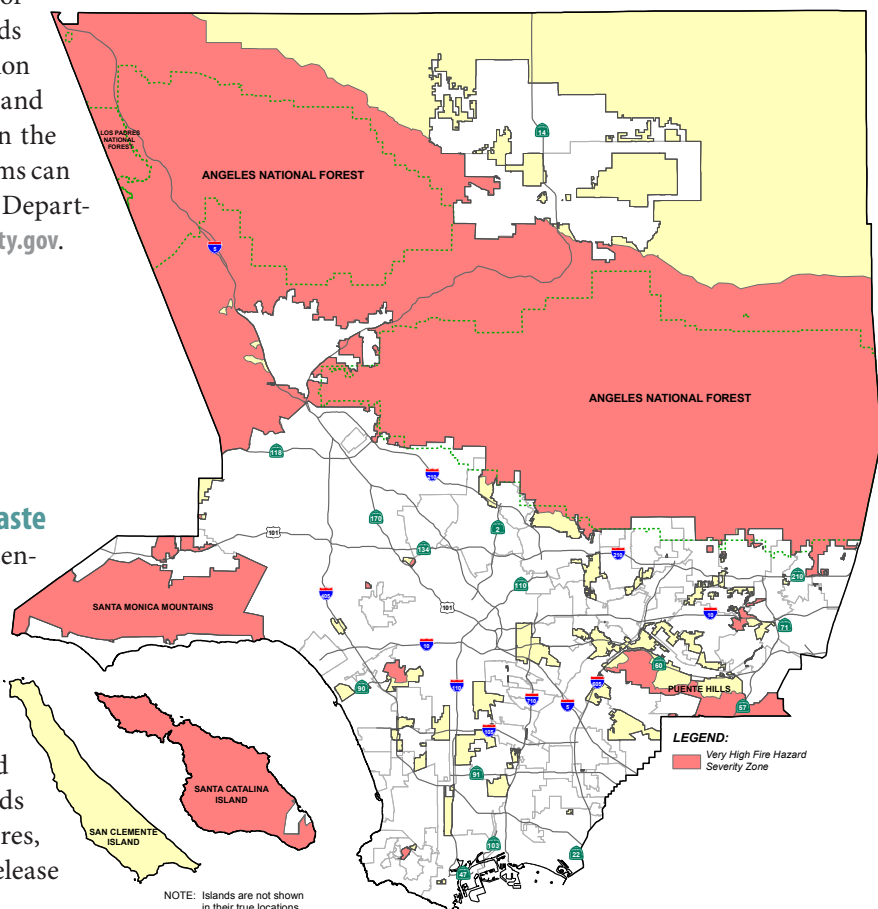


Figure 8.3: L.A. County Very High Fire Hazards Map

V. PROTECTION AND RESPONSE

The Safety Element provides a policy framework for the implementation of short-range emergency preparedness plans to maintain long-term safety goals. This section describes the protection and response providers for the unincorporated areas of the County.

Office of Emergency Management (OEM)

The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. The OEM is the day-to-day Los Angeles County Operational Area coordinator for the entire geographic area of the County. OEM's broad responsibilities include:

- **Planning and Coordination:**
 - Maintaining an approved Operational Area Emergency Response Plan (see following section); and,
 - Providing ongoing leadership and coordinating disaster plans and exercises with the 88 cities, 137 unincorporated communities and 288 special districts in the county.



Fire Station Response, Altadena



Hazardous Materials Team, Los Angeles County Fire Department

- **Operations:**
 - Maintaining the County Emergency Operations Center (CEOC) in a state of operational readiness, in partnership with the Sheriff's Emergency Operations Bureau;
 - Serving as on-call CEOC first responders on a 24-hour basis;
 - Providing an OEM duty officer on a 24-hour basis to address inquiries and concerns from County, local and state officials regarding potential or escalating emergency conditions; and,
 - Training and technical operations.
- **Public Education & Grants Administration:**
 - Maintaining a cadre of CEOC team members trained in section and position responsibilities and use of the Emergency Management Information System (EMIS); and,
 - Providing ongoing training for county Department Emergency Coordinators (DECs) and Building Emergency Coordinators (BECs).

Operational Area Emergency Response Plan

The most crucial emergency response plan in the unincorporated areas of the County is the *Operational Area Emergency Response Plan* (OAERP), which is prepared by the Office of Emergency Management. The OAERP strengthens short and long-term emergency response and recovery capability, and identifies emergency procedures



Sheriff's Helicopter

Los Angeles County Sheriff's Department (LASD)

The LASD is the largest sheriff's department in the world. In addition to specialized services, the LASD is divided into ten (10) divisions, each headed by a Division Chief. One of the newest divisions at LASD is the Office of Homeland Security, a proactive effort to enhance the Department's response to potential threats related to local homeland security issues, such as terrorism or bio-terrorism. The LASD is also covered in more detail in Chapter 9, the Public Service and Facilities Element. Further information on the LASD and the Office of Homeland Security can be found at the LASD's website at <http://www.lasd.org/>.

and emergency management routes in the County. The OAERP, along with more information on the OEM, can be found at the County's Chief Executive Office (CEO) website at <http://lacoa.org/>.

Los Angeles County Fire Department (LACFD)

The LACFD is organized into nine (9) divisions throughout the unincorporated County. In 2005, the LACFD had 4,547 personnel, which includes 639 administrative personnel, and an extensive reserve of safety and fire-fighting equipment. Out of the 282,091 emergency operations in 2005, over 68% were rescues (193,454 incidents), with the other 88,637 incidents being fires (10,195) or classified as "other" (78,442).

The LACFD operates other divisions including Emergency Services, Forestry, and a Health Hazard Materials Division, whose mission is to "protect the public health and the environment throughout Los Angeles County from accidental releases and improper handling, storage, transportation, and disposal of hazardous materials and wastes through coordinated efforts of inspections, emergency response, enforcement, and site mitigation oversight." The LACFD is covered in more detail in Chapter 9, the Public Service and Facilities Element. Further information on LACFD's programs and divisions can be found on its website at <http://fire.lacounty.gov/>.

Hazard Mitigation Plan

The County, in conjunction with its many emergency services partners, has prepared a *Local All-Hazards Mitigation Plan* that sets strategies for coping with the natural and man-made hazards faced by residents. The plan is a compilation of information from County departments correlated with known and projected hazards that face southern California. The plan complies with, and has been approved by, the Federal Emergency Management Agency (FEMA) and the Governor's Office of Emergency Services (OES). The plan has been formally adopted by the County Board of Supervisors (BOS) for use in the development of specific hazard mitigation proposals.

The County *Local All-Hazards Mitigation Plan* addresses potential damages in the unincorporated portions of the County, as well as to County facilities. Cities, schools, special districts, and eligible non-profit organizations within the County must prepare and submit separate Hazard Mitigation Plans to FEMA for approval. The Plan can be found on the CEO's website, located at <http://lacoa.org/hazmit.htm>.

VI. GOALS, POLICIES, AND IMPLEMENTATION ACTIONS

The goals and policies which apply to safety are:

Goal S-1

An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to natural or man-made disasters.

- **Policy S 1.1:** Enforce stringent site investigations for factors related to hazards.
- **Policy S 1.2:** Limit development in high hazard areas such as floodplains, high fire hazard areas, and seismic hazard zones.
- **Policy S 1.3:** Facilitate the safe transportation, use, and storage of hazardous materials in the County.
- **Policy S 1.4:** Encourage the reduction or elimination of the use of hazardous materials.
- **Policy S 1.5:** Support comprehensive lead paint abatement efforts.
- **Policy S 1.6:** Remediate brownfield sites to limit community exposure to potential toxins.
- **Policy S 1.7:** Encourage the purchase of homes on the Federal Emergency Management Agency (FEMA) Repeat Hazard List and designate the land as open space.
- **Policy S 1.8:** Prohibit and enforce restrictions on public access to important energy sites.
- **Policy S 1.9:** Limit development downslope from all aqueducts.
- **Policy S 1.10:** Promote safe, biodegradable alternatives to chemical-based products in households.
- **Policy S 1.11:** No development is allowed in County floodways, as defined in the County Code.

Implementation Action S 1.1

Research procuring funding sources to purchase at risk properties in hazard areas on FEMA's repeat hazards list.

Goal S-2

Effective County emergency response management capabilities.

- **Policy S 2.1:** Support County emergency providers with reaching their response time goals.
- **Policy S 2.2:** Promote the participation and coordination of emergency response management between cities and other Counties at all levels of government.
- **Policy S 2.3:** Coordinate with other County and public agency emergency planning and response activities.
- **Policy S 2.4:** Encourage the development of an early warning system for tsunamis, floods and wildfires.

Implementation Action S 2.1

Work with the County to hold a Safety Fair for County employees.

Implementation Action S 2.2

Digitize all historical approved project files, legal documents and pertinent Departmental information that would be necessary to operate an emergency mobile Planning Office, in case the Hall of Records was inaccessible due to unexpected circumstances.

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